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NEW SPECIES OF *HIBBERTIA* ANDREWS (DILLENIACEAE) FROM AUSTRALIA

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Summary

Seven new species of *Hibbertia* (Dilleniaceae) *viz H. arnhemica, H. cymosa, H. hendersonii, H. laurana, H. mulligana, H. oligodonta,* and *H. pholidota,* and a new form of *H. banksii viz H. banksii* forma *rigidula* from Australia are described with notes on their affinities and distribution.

Introduction

The preparation of a Census of Queensland plants at BRI has necessitated a review of some of the genera in which there has been confusion with the identity of the species or where there were many known undescribed taxa. The genus *Hibbertia* (Dilleniaceae) is one of the many genera that have been studied.

Continued studies over the years at BRI, of the Queensland species of *Hibbertia*, have shown that there was much confusion with the identity of some of the species and several undescribed taxa. Many of the species contained more than one taxon, and there were also undescribed taxa closely related to some of the species. Confusion was particularly obvious in the following species or groups of species, *viz H. banksii, H. acicularis, H. stricta, H. cistoidea* and *H. longifolia,* and in the *H. linearis – H. obtusifolia – H. diffusa* group, *H. velutina – H. melhanioides* group, and the *H. cistifolia – H. oblongata – H. lepidota* groups. Recent collecting due to various floristic studies in Queensland and Northern Territory have made it possible to understand some of the above species and to segregate and describe the following new species and discuss their affinities.

Note: Bentham's division of *Hibbertia* into sections (1863, 1: 17–20) is followed in this account for easy reference of the relationship of the new species.

A. *Hibbertia banksii* (R. Br. ex DC.) Benth. and allies

Four distinct taxa are present in this group *viz H. banksii* (R. Br. ex DC.) Benth. with two forms, and the two species now described as *H. arnhemica* and *H. laurana.* These species have stamens on one side of the carpels, staminodes outside the stamens and two hairy carpels, and are referable to section *Hemistemma* (Juss. ex Thouars) Benth. (1863, p. 17). These species are easily distinguishable by their rusty tomentose stems and peduncles, spiciform inflorescences with secund flowers, and by the numerous stamens (20–50 per flower). Their leaves are discolorous and usually densely white hairy on the lower surfaces and with conspicuous rusty nerves, the margins are revolute, recurved or flat, entire, serrulate or dentate. These species may be separated from each other as follows:

1. Sepals 5–11 × 3–7 mm, elliptic or elliptic-ovate with subacute or obtuse apex; peduncles 0.7–4.5 cm long; leaf margins serrulate or entire **1. H. banksii**
   Sepals 13–23 × 7–11 mm, elliptic, elliptic-ovate to obovate with acute-acuminate, obtuse or rounded apex; peduncles 0.7–2.7 cm long; leaf margins entire, dentate or denticulate 2

2. Leaves denticulate or dentate; petioles 8–12 mm long; bracts 6–7 × 2.5–3 mm; sepals rounded or obtuse at apex, 13–17 × 9–11 mm; stamens 30–50 per flower; spikes 3–5-flowered . . . . . **2. H. laurana**
   Leaves entire; petioles 0.5–3 mm long; bracts 8–21 × 2–15 mm; sepals acute-acuminate at apex, 15–23 × 7–10 mm; stamens 20–30 per flower; spikes 8–12-flowered . . . . . **3. H. arnhemica**

1. Hibbertia banksii (R. Br. ex DC.) Benth., Fl. austral. 1: 21 (1863). *Hemistemma banksii* R. Br. ex DC., Syst. Veg. 1: 414 (1817). **Type**: Queensland. COOK DISTRICT: Endeavour R., date unknown, *J. Banks* (*n.v.*).

Shrubs to 3 m, occasionally multistemmed; branchlets usually terete, densely tomentose with pale or rusty-brown hairs. Leaves elliptic, elliptic-oblong or subobovate, (3.7–)5–11 × (0.5–)1.6–4.5 cm; apex obtuse, emarginate, subtruncate or rarely subacute; margins entire or surrulate (teeth 1–6 on each side of the midrib), usually recurved; base obtuse, subacute or cuneate; thinly coriaceous or sometimes thick and slightly rigid; upper surfaces glabrous or hairy on the midrib; lower ones densely white tomentose except rusty or yellowish brown nerves and reticulate venation; lateral nerves 5–12 pairs, patent and looping at margins in entire-leaved forms, or slightly oblique and ending in marginal teeth in toothed-leaved forms; reticulate venation impressed above; petioles 3–12 mm long, pubescent. Spikes terminal or axillary, 2–8 cm long, 3–10-flowered; peduncles (from the lowest flower down) 1–4 cm long, rusty tomentose; bracts narrowly ovate or elliptic, 2–7 × 1–2 mm, often keeled, rusty hairy. Buds ellipsoid. Flowers 1.7–2.5 cm diameter; sepals ovate-elliptic or elliptic, 5–11 × 3–7 mm, obtuse or subacute, concave, slightly rigid, tomentose or villous outside, glabrous and shiny inside or hairy towards the apex inside; petals obovate, 2-lobed at apex, 9–23 × 7–15 mm; stamens 20–48; filaments free, filiform 1.5–2 mm long; anthers narrowly obloid, 2–4 mm long; staminodes 9–20, linear or clavate, 3–4 mm long; carpels 2, densely villous mostly at apex only, or tomentose; ovules 2 per carpel. Seeds 1 or 2 per carpel, obovoid or subglobose, covered by the pale membranous aril or with a small aril at its base.

The species varies considerably especially in its leaves, two forms are recognised, although they sometimes merge into each other at the extension of their range. They can be separated as follows:

1. Leaves 0.5–2.3 cm wide; margins entire or very sparsely toothed (teeth 1–3 on each side of the midrib); thinly coriaceous; petioles 3–7.5 mm long; spike usually with closely arranged flowers; peduncles 1.2–4 cm long; seeds usually covered by the aril . . . . . forma **banksii**

   Leaves 2.5–4.5 cm wide, margins crenulate-serrulate (teeth 2–6 on each side of the midrib); slightly thick and rigid; petioles 5–12 mm long; spikes usually with separated flowers; peduncles 1–2.5 cm long; seeds usually with a small aril at its base . . . . . forma **rigidula**

Hibbertia banksia forma **banksii**

Leaves narrowly elliptic to subobovate, 3.7–10.5 × 0.5–2.3 cm; apex obtuse, emarginate, subtruncate or subacute; margins entire or sparsely toothed, recurved; base subacute or cuneate; thinly coriaceous; lateral nerves patent, looping near the margin, or sometimes slightly oblique and ending in marginal teeth; reticulate venation closely reticulate, ± impressed on upper surfaces; petioles 3–7.5 mm long. Spikes with closely arranged flowers, terminal or axillary, peduncles 1.2–4 cm long; petals 10–11 × 7–9 mm; stamens 21–48; staminodes 10–20; carpels densely villous all over or only at apex. Seed usually enclosed in the aril.

Selected specimens: Papua New Guinea. WESTERN DIVISION: Timbuke, Wassi Kussa R., *Brass* 8431 (BRI). **Australia. Queensland.** COOK DISTRICT: Cape York, north of Jardine R. about 32 km NE of Bamaga, Oct 1971, *Dodson* s.n. (BRI); Sharp Point, Jun 1978, *Clarkson* 2116 (BRI); Olive R., Sep 1974, *Hyland* 7463(BRI); N of Massey Ck, about 13 km NW of Silver Plains, Aug 1978, *Kanis* 2018 (BRI); upper reaches of Isabella Ck, NW of Cooktown, Jul 1990, *Bean* 1940 (BRI).

Distribution and habitat: Northern Queensland, from Cape York to Daintree R., and in southern New Guinea (**Map 1**); usually in deep sand in river flood banks and edge of swamps.

H. banksii forma *banksii* is distinguishable by the usually narrowly elliptic leaves, entire or sparsely toothed recurved margins, thin texture of the leaves with prominent impressed reticulate venation on upper surfaces; long peduncled spikes, elliptic-ovate sepals, and seeds usually covered by the aril.

Hibbertia banksii forma **rigidula** S. Reyn. **forma nov.** differt a forma *banksii* (R. Br. ex DC.) Benth. foliis latioribus crassiusculis rigidulis, petiolis longioribus et arillo plerumque parvulo. **Typus**: Queensland. COOK DISTRICT: Tozer Gap, Iron Range, July 1948, *L.J. Brass* 19425 (holo: BRI).

Leaves oblong-elliptic to obovate, 4.5–11.5 × 2.5–4.5 cm; apex broad obtuse, emarginate or truncate; margins crenulate-serrulate, toothed mostly in the distal half with 2–6 small teeth on each side of midrib, flat or slightly recurved; base obtuse or subacute; thickly coriaceous and ± rigid; reticulation prominent, not impressed above; petioles 5–12 mm long. Spikes with loosely arranged flowers, axillary; peduncles 1–2.5 cm long; petals 9–23 × 8–15 mm; stamens 20–25; staminodes 9–14; carpels tomentose. Seed usually with a small aril at its base.

Selected specimens: Queensland. COOK DISTRICT: McDonnell heath, 11°35′S, 142°27′E, Jul 1970, *Isbell* s.n. (BRI); road between Heathlands and Captain Billy Ck, 11°36′S,142°46′E, May 1980, *Morton* 639 (BRI); Iron Ra. Rd, about 1 km upstream from Brown Ck Crossing, Cape Weymouth, Apr 1988, *Forster* 4157 & *Liddle* (BRI); Tozer Gap, Iron Ra., Jul 1948, *Brass* 19425 (BRI); Kennedy Rd, 13 miles [20.8 km] NNE of Pascoe R. Crossing, Aug 1965, *Gittins* 1021(BRI).

Distribution and habitat: Far northern Queensland, between McDonnell heath and Pascoe R., common around Iron Ra. (**Map 2**); usually in heathlands and sandy ridges; altitude 75–500 m.

Hibbertia banksii forma *rigidula* differs from forma *banksii* by its broader, thicker more rigid leaves, and by the very small aril at the base of the seed. Further collections may indicate this form is worth recognition at a higher rank.

Etymology: The epithet *rigidula* (Latin), slightly rigid, refers to the texture of the leaves of this form.

2. **Hibbertia laurana** S. Reyn. **sp. nov.** quoad aspectum foliorum, inflorescentias et indumentum *H. banksii* (R. Br. ex DC.) Benth. accedit sed ab ea differt essentialiter floribus multo majoribus, sepalis ellipticis vel obovatis, foliis latioribus et colore indumenti inflorescentiarum et foliorum multo pallido. **Typus**: Queensland. COOK DISTRICT: Mushroom Rock, 5°56′S, 144°24′E, 5.3 km east of Peninsula Development road on an IWS track leaving the main road, 0.5 km N of the Laura R., 26 April 1983, *J.R. Clarkson* 4710 (holo: BRI).

Shrubs 2–4 m tall, often robust and multi-stemmed; bark grey-brown, fissured; young parts densely rusty tomentose; branchlets terete, tomentose. Leaves elliptic, 7.5–9.5 × 2–3.7 cm, apex obtuse sometimes mucronulate, base obtuse, cuneate to subacute, margins remotely dentate or denticulate, recurved or revolute, ± rigid, upper surfaces slightly shiny, usually drying grey green, glabrous or nerves hairy, lower surfaces white tomentose, hairs brownish on lateral nerves and reticulate venation; lateral nerves 8–10 pairs, ± patent or oblique and ending in marginal teeth; upper surfaces rugose, with impressed, closely arranged reticulate venation; petioles 8–12 mm long. Spikes axillary, 3.5–5.5 cm long, with 3–5 secund flowers, peduncles (from lowest flower down) 7–17 mm long, stout, terete, densely rusty tomentose; bracts ovate or elliptic, 6–7 × 2.5–3 mm, rusty velvety hairy; buds broadly ellipsoid, 1.4–1.6 × 1.4–1.9 cm. Flowers (old ones only seen) 3.2–3.5 cm diameter; sepals elliptic to obovate, rounded or obtuse at apex, concave, 1.3–1.7 × 0.9–1.1 cm, coriaceous, stiff, densely villous or tomentose outside with rusty hairs, glabrous and shiny inside; petals broadly obovate, 2-lobed at apex, 1.2–1.4 × 1–1.8 cm (imperfect ones only seen), deciduous; disc villous; stamens 30–50, all placed on one side of the carpels in rows; filaments ± united at base, linear, 1.5–2 mm long; anthers narrowly obloid, 3.5–4 mm long; staminodes 14–31, on outside of stamens, 3–4 mm long, linear or narrowly elliptic, acute at apex; carpels 2, densely villous or hairy only towards apex, ovules 2 per carpel; style glabrous. Seeds 1 or 2 per carpel, obovoid, 4–5 × 3–4 mm, brown, enveloped by a thin pale lobed aril. **Fig. 1A–G.**

Selected specimens: Queensland. COOK DISTRICT: N of Laura R. near Earlyman site, May 1975, *Byrnes* 3303 (BRI); Giant Horse Gallery, Laura, Mar 1975, *Hyland* 8115 (BRI); upper reaches of Garden Ck, east of Laura-Maytown Rd, Jul 1990, *Bean* 1767 (BRI).

Distribution and habitat: Common around Laura, far northern Queensland (**Map 1**); usually among sandstone outcrops.

H. laurana is easily distinguishable by its spikes of very large secund flowers, rounded apex of its sepals, and broad, dentate, hairy leaves. It is similar to *H. banksii*

but differs chiefly in its large flowers and rounded apices of the elliptic-obovate sepals. The leaves are broader and also more dentate in *H. laurana* and the indumentum on the inflorescences and on the lower surface of the leaves are much paler than that in *H. banksii*.

Etymology: The specific epithet is taken from the locality *viz* Laura, where this species is quite common.

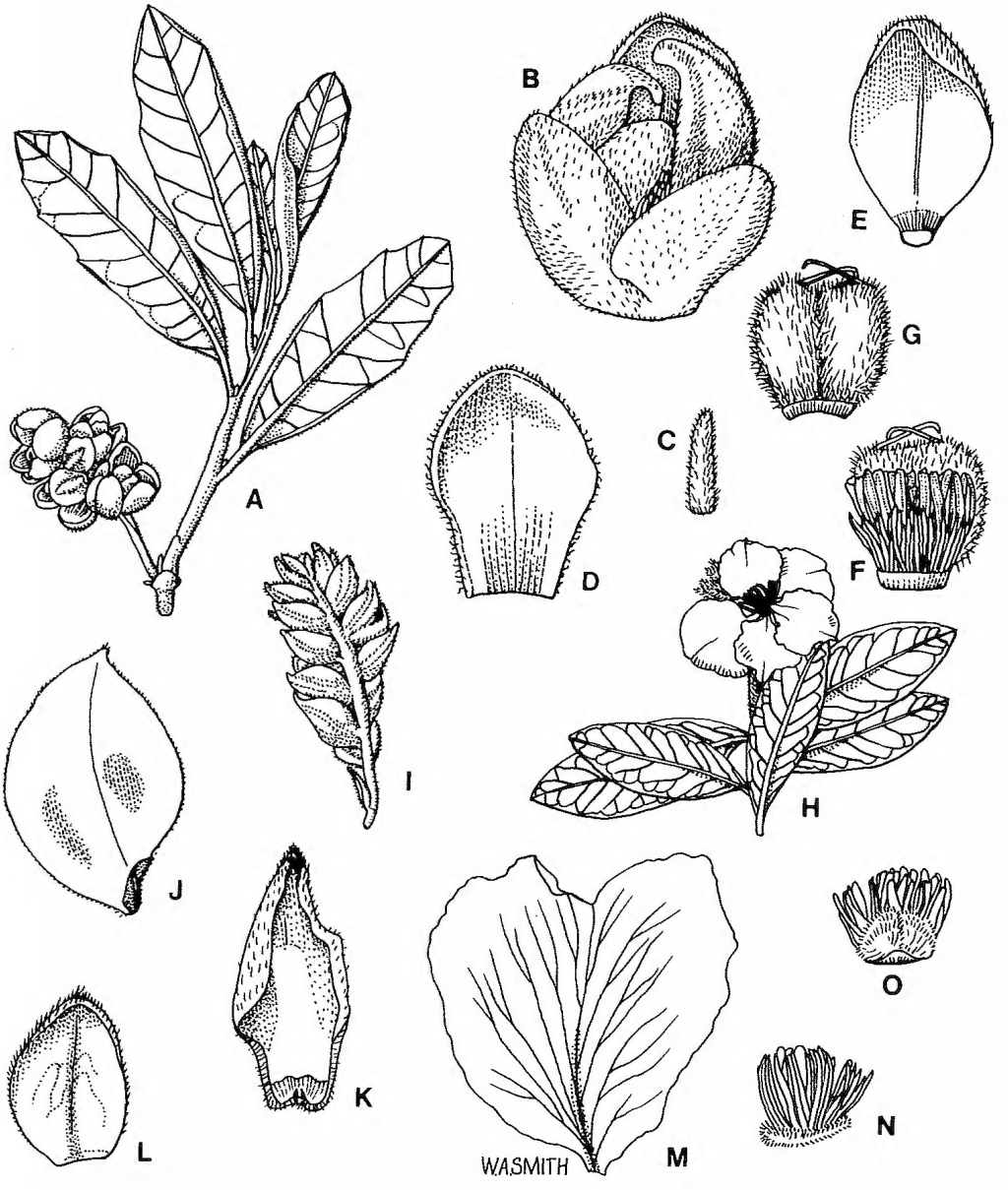

Fig. 1. A–G. *Hibbertia laurana*: A. flowering branch × 0.5. B. flower × 2. C. bract × 3. D. outer sepal × 2. E. inner sepal × 2. F. stamens, staminodes and carpels × 2. G. carpels × 2. H–O. *Hibbertia arnhemica*: H. flowering branch × 0.5. I. spike × 0.5. J. bract × 2. K. outer sepal × 2. L. inner sepal × 2. M. petal × 2. N. stamens × 2. O. carpels and stamens × 2. A–G, Bean 1767; I, Lazarides 7571; H,J–O, Lazarides 7858.

3. **Hibbertia arnhemica** S. Reyn. **sp. nov.** *H. banksiae* (R. Br. ex DC.) Benth. et *H. lauranae* S. Reyn. affinis a quibus imprimis differt bracteis multo majoribus late ovatis, foliis margine integris non recurvis. **Typus:** Northern Territory. Arnhem Land, east of Mt Howship near East Alligator R., 12°36′S, 133°19′E, 8 July 1972, *M. Lazarides* 7571 (holo: BRI).

Erect shrubs to 1 m tall, bark pale grey; young parts pale rusty tomentose with pale or whitish short curved hairs, intermingled with long straight hairs; branchlets stout, terete, densely hairy with tight crispate hairs as well as long spreading fine hairs. Leaves ovate or elliptic, (5–)6.3–7.1 × (1.6–)3–4.5 cm, apex acute, subacuminate or obtuse, mucronate; base obtuse, subtruncate or acute; margins entire, flat, rarely slightly recurved; very discolorous, ± rigid, upper surfaces drying grey green, glabrous or hairy on midrib, lower ones whitish, densely tomentose with white hairs, lateral nerves and reticulate venation rusty brown hairy; lateral nerves 8–10 pairs, slightly oblique; reticulate venation prominent; petioles 0.5–3 mm long, hairy. Spikes terminating branchlets, 7.8–11.5 cm long, with 8–15 closely arranged secund flowers; peduncles stout, ± terete, 1.1–2.7 cm long (from the lowest flower down), densely crispate hairy; bracts very conspicuous, ovate-elliptic or broadly to narrowly ovate, acuminate, 1.3–2.1 × 0.8–1.5 cm, keeled, velvety. Buds ovoid, 1.8–2.3 × 1–1.2 cm. Flowers 3.4–4.5 cm diameter; sepals ovate or narrowly ovate, acute or acuminate, 1.5–2.3 × 0.7–1 cm, concave, ± rigid, densely rusty villous outside, glabrous inside; outer sepals larger than inner ones, slightly keeled; petals obovate, 2-lobed at apex, 1.8–2.3 × 1.5–2.2 cm, entire; disc villous; stamens 20–30, placed on one side of carpels, 4.5–8 mm long; filaments free, linear, 1.5–3 mm long; anthers narrowly obloid, 3–5 mm long; staminodes 8–15, inserted on outside of the stamens, 5–7 mm long, narrowly elliptic; carpels 2, densely villous; ovules 2 or 3 per carpel; style 2.5–3.5 mm long, glabrous; seeds 1 per carpel, obovoid, to 6.5 × 5.5 mm, with a cupular, lobed, pale aril towards its base. **Fig. 1H–O.**

Selected specimens: Northern Territory. Upper East Alligator R., 12°38′S, 133°26′E, Aug 1990, *Menkhorst* 986 & 987 (DNA); 3 miles [4.8 km] upstream from Jim Jim Falls, 13°12′S, 132°47′E, Jul 1977, *Byrnes* 2726 (BRI,DNA); Jim Jim Ck, 3.5 km ESE of Jim Jim Falls, May 1980, *Lazarides* 8940 (DNA); about 12 miles [19.2 km] E of El Sharana Mine, 13°20′S, 132 °32′E, Feb 1973, *Lazarides* 7858 (BRI).

Distribution and habitat: Arnhem Land, Northern Territory, between East Alligator R. and Jim Jim Falls **(Map 1)**; on sandstone plateau, usually in permanently wet deep sandy soil in eucalypt woodlands.

H. arnhemica is distinguishable by its large flowers with conspicuous large ovate bracts, inflorescences with secund flowers, and entire, very discolorous leaves. It is allied to *H. banksii* and *H. laurana* but differs essentially from both by its entire leaves and much larger bracts.

Etymology: The specific epithet refers to the region *viz* Arnhem Land, where this species is endemic.

B. *Hibbertia stricta* (R. Br. ex DC.) Benth. and allies

Amongst the variability noted under *H. stricta* is *H. hendersonii.* These species have stamens on one side of the carpels but no staminodes and are referable to section *Pleurandra* (Labill.) Benth. (1863, p. 18).

4. **Hibbertia hendersonii** S. Reyn. **sp. nov.** *H. strictae* var. *hirtiflorae* Benth. accedens sed habitu erecto, foliis longioribus, staminibus numerosis (20–31, raro 12), et sepalis multo majoribus. **Typus:** Queensland. LEICHHARDT DISTRICT: Blackdown Tableland about 35 km SE of Blackwater, altitude 600–900 m, 3 September 1971, *R.J. Henderson* H934, *L. Durrington & P. Sharpe* (holo: BRI; iso: BRI).

Erect shrubs to 1 m high, usually multi-stemmed; branchlets terete or slightly angular towards their tips, usually densely hairy with fine, long, slightly stiff spreading hairs, intermingled with shorter ones. Leaves suberect to patent, very narrow and elongate, narrowly elliptic, (21–)28–45 × 1–3 mm, apex subacute, mucronate; margins revolute; base subacute; both surfaces usually densely hairy with fine spreading hairs; midrib raised below, ± sunken above; petioles to 1 mm long. Flowers 2.5–2.8 cm diameter, sessile, solitary, axillary or terminating branchlets, 1–21 per branchlet with the terminal one the oldest; bracts narrowly ovate, 3–7 × 1–2 mm. Buds ellipsoid or ovoid, acuminate. Sepals ovate, abruptly acuminate, (8–)10–14 × 5–7 mm, apex recurved, outer sepals densely

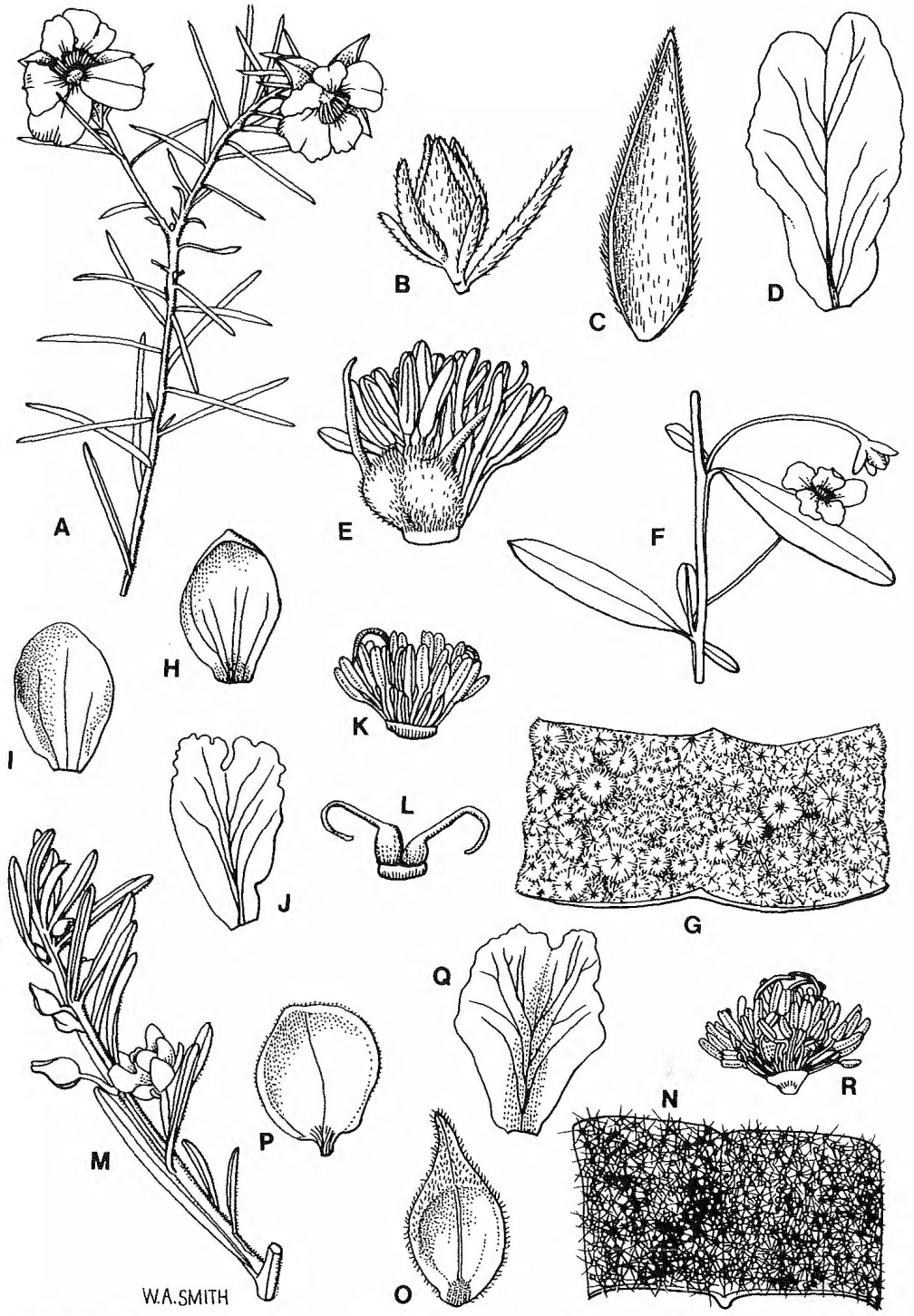

Fig. 2. A–E. *Hibbertia hendersonii*: A. flowering branch × 1. B. bud × 2. C. sepal × 4. D. petal × 4. E. stamens and carpels × 4. F–L. *Hibbertia pholidota*: F. flowering branch × 1. G. portion of leaf showing scales × 8. H. outer sepal × 4. I. inner sepal × 4. J. petal × 4. K. stamens × 4. L. carpels × 4. M–R. *Hibbertia mulligana*: M. flowering branch × 1. N. portion of leaf showing stellate hairs × 8. O. outer sepal × 4. P. inner sepal × 4. Q. petal × 4. R. stamens × 4. A–E, Henderson H934, Durrington & Sharpe; F–L, Warrian 5060; M–R, Clarkson 5307.

white hairy all over outside and towards the distal half inside, with long fine hairs intermingled with short hairs; inner sepals usually glabrous, ciliate; petals obovate, emarginate, entire, 12–14 × 8–10 mm; stamens 20–31, rarely 12, placed on one side of the carpels; filaments free, filiform, 1.5–2 mm long; anthers 2–3 mm long, narrowly obloid; carpels 2, densely sericeous, ovules 10–12 per carpel; styles 3–6 mm long, glabrous. Seeds 3–7 per carpel, ± reniform, to 2 × 1 mm, with small pale campanulate aril at its base. **Fig. 2A–E.**

Selected specimens: Queensland. LEICHHARDT DISTRICT: Blackdown Tableland, 1st creek, Aug 1964, *Gittins* 931 (BRI); ditto, on northern edge, Nov 1972, *Johnson & Blaxell* 876 (BRI); ditto, track to Stony Ck, Aug 1980, *Williams* 80189 (BRI).

Distribution and habitat: Common on Blackdown Tableland, central Queensland (**Map 2**); in sandy soil in open eucalypt forests; altitude 600–900 m.

H. hendersonii is recognisable by its erect stems, long linear leaves with very revolute margins, and fairly large flowers in axil of upper leaves. It approaches *H. stricta* var. *hirtiflora* Benth. but differs from it in its erect habit, longer leaves, greater number of stamens (20–31 (rarely 12) in number per flower), and by the larger sepals. *H. stricta* var. *hirtiflora* is a smaller plant with decumbent, sparsely hairy stems, smaller leaves and flowers, and also fewer stamens (12–17 in number). The leaves and sepals of the latter are also sparsely and finely hairy.

Etymology: The species is named in honour of Mr R.J.F. (Rod) Henderson (BRI), one of the collectors of the type, who recognised this plant as a distinctive new species.

C. New species of *Hibbertia* section *Hibbertia* (Andrews) Benth. (1863, p. 19)

Among the new species in this section are *H. cymosa*, *H. mulligana*, *H. oligodonta* and *H. pholidota*. These species have stamens all around the carpels. *H. oligodonta* has sessile flowers and glabrous carpels and is referable to series *subsessiles* Benth. (1863, p. 20); while *H. cymosa*, *H. mulligana* and *H. pholidota* have pedunculate flowers and scaly carpels and are referable to series *tomentosae* Benth. (1863, p. 19).

5. Hibbertia oligodonta S. Reyn. **sp. nov.** *H. diffusae* R. Br. ex DC. aspectu maxime similis praecipue differt caulibus plerumque erectis, et indumento piliorum dense crispatorum, *H. lineari* R. Br. ex DC. et specierum affinium affinis, praecipue differt foliis paucidentatis. **Typus:** Queensland. LEICHHARDT DISTRICT: Bauhinia Downs – Rolleston Rd, about 20 miles [32 km] W of Bauhinia Downs, 31 August 1964, *R.W. Johnson* 2806 (holo: BRI).

Low, compact, erect, multi-stemmed shrubs to 1 m high, sometimes with ± straggly branches; branchlets ± terete, young ones densely crispate hairy, older ones ± glabrous. Leaves occasionally clustered on short branchlets, obovate or obovate-cuneate, rarely narrowly elliptic-obovate, 14–28(–50) × 6–14(–25) mm; apex obtuse or subtruncate, mucronate, sometimes retuse; margins denticulate or dentate usually in the distal half with 1–4 teeth on each side of the midrib, very rarely entire; base cuneate, decurrent into short petioles; both surfaces usually densely crispate hairy, lower surfaces usually glaucous; midrib mostly drying reddish brown; lateral nerves obscure; petioles 1.5–3 mm long, flattened, articulate near base. Flowers 2.3–3.4 mm diameter, sessile, solitary, terminating short branchlets, subtended by young leaves; bracts ovate-triangular, 4–7 × 1–1.5 mm, finely hairy outside with long white hairs. Buds ellipsoid. Sepals broadly elliptic, 7–10 × 5.5–8 mm, slightly keeled and apiculate at ± rounded apex, concave, glabrous except sparsely crispate hairy margins; inner sepals larger than the outer ones; petals obovate-cuneate, 9–15 × 9–13 mm, slightly emarginate, entire; stamens 22–38, all placed around the carpels; filaments free, filiform, 2.5–3 mm long; anthers as long as filaments, narrowly obloid, obtuse; carpels 3, glabrous; ovules 2 per carpel; styles 4–4.5 mm long. Seeds 1 or 2 per carpel, subglobose, 2–2.5 × 2.5 mm, brown, with a small pale deeply lobed aril at its base. **Fig. 3A–F.**

Selected specimens: Queensland. LEICHHARDT DISTRICT: Salvator Rosa National Park, Oct 1981, *Cockburn* 31 (BRI); Blackdown Tableland about 32 km SE of Blackwater, on Mimosa Ck, Apr 1971, *Henderson* H588, *Andrews & Sharpe* (BRI); ditto, Sep 1970, *Williams* 79087 (BRI); Shotover Ra., 60 miles (97 km) ENE of Springsure, Sep 1961, *Lazarides & Storey* 45 (BRI).

Distribution and habitat: Common on and around Blackdown Tableland, central Queensland (**Map 1**); in sandstone ridges, rocky outcrops, in sandy soil amongst sandstone rocks, usually in open eucalypt forests; altitude 600–700 m.

H. oligodonta is distinguishable by the sparsely toothed leaves and crispate hairy erect stems. It is at first sight very similar to *H. diffusa* with which it had been confused in the past, but differs from it mainly in the dense crispate hairs on the erect stems (in *H. diffusa* the stems are usually decumbent and the hairs are straight and spreading). It is closely related to *H. linearis* and its allies, but the leaves are usually entire in those species.

Etymology: The specific epithet refers to the few-toothed (*oligo* (Greek), few; *dontus* (Greek), toothed) margins of the leaves.

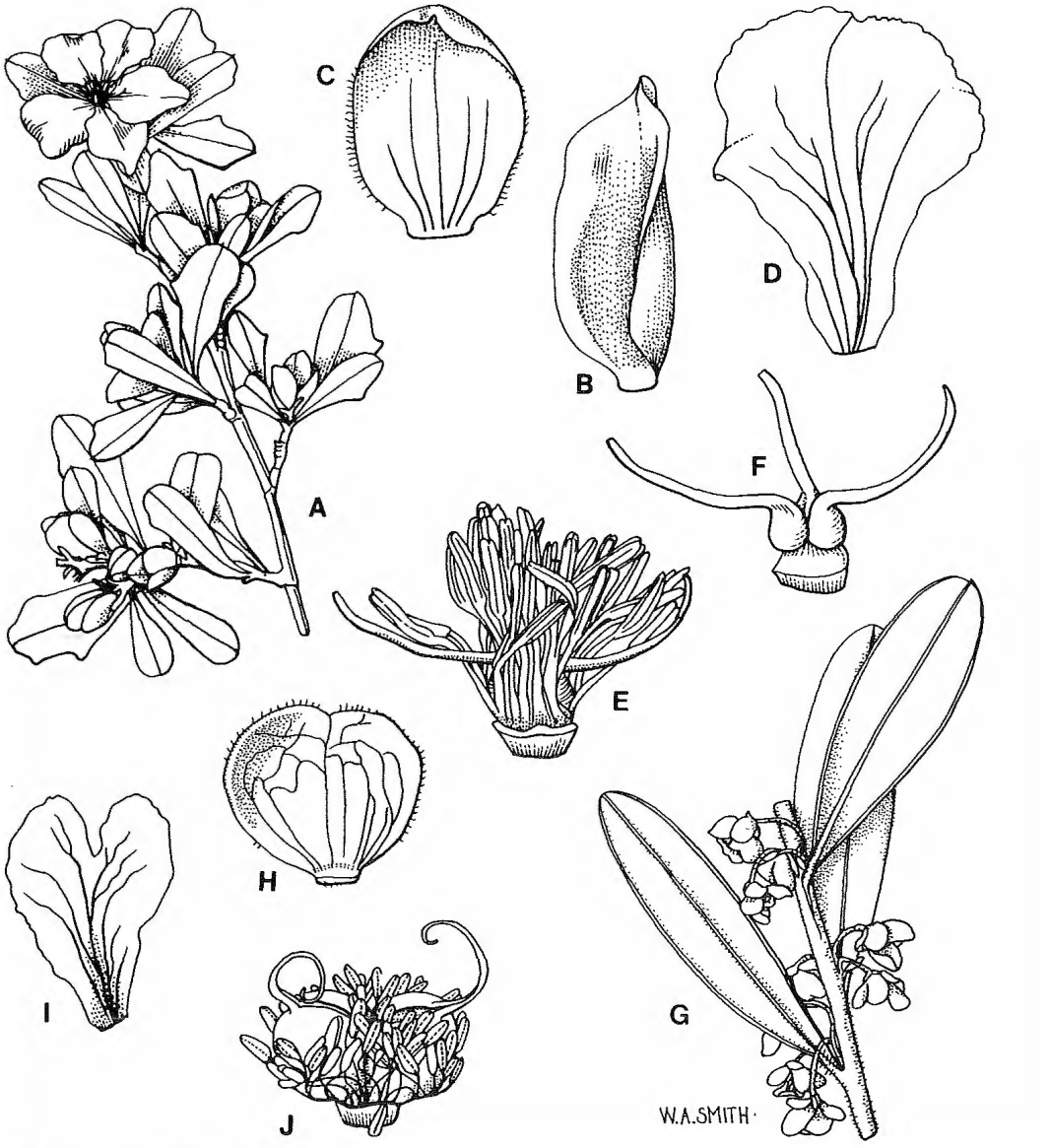

Fig. 3. A–F. *Hibbertia oligodonta*: A. flowering branch × 1. B. outer sepal × 4. C. inner sepal × 4. D. petal × 4. E. stamens × 4. F. carpels × 4. G–J. *Hibbertia cymosa*: G. flowering branch × 1. H. sepal × 4. I. petal × 4. J. stamens and carpels × 4. A–F, Johnson 2800; G–J, Bean 1713.

6. Hibbertia mulligana S. Reyn. **sp. nov.** *H. melhanioidi* F. Muell. affinis praecipue differt, foliis multo angustioribus, anguste ellipticis, margine revolutis, et sepalis exterioribus conspicuis, multo majoribus, late ovatis. **Typus:** Queensland. Cook District: Mt Mulligan, 16°54′S, 144°51′E, alt 750 m, 12 April 1984, *J.R. Clarkson* 5307 (holo: BRI; iso: BRI,K,L,MEL,MO,NSW,QRS,PERTH).

Subshrubs to 1 m high, with erect or rarely decumbent stems; usually with loose bark; branchlets terete or ± 4-angular towards their tips and slightly keeled, densely stellate hairy with long hairs, older ones ± glabrous. Leaves narrowly elliptic or subobovate-elliptic, (20–)32–45 × 2.5–5.5 mm; apex obtuse; margins entire, recurved; base acute, narrowing and decurrent into short petioles; both surfaces stellate hairy, hairs denser below; midrib sunken above, raised below; lateral nerves patent, sometimes distinct below; petioles 1.5–2.5 mm long, densely stellate hairy. Flowers solitary, axillary, 1.2–1.5 cm diameter, long pedunculate; peduncles filiform, dilated at their tips, 1.2–3 cm long, densely stellate hairy; bracts narrowly elliptic to clavate, 4–7 × 0.5–2 mm, densely stellate hairy. Buds ovoid, acuminate. Sepals unequal, outer ones larger than the inner ones, usually broadly ovate-elliptic, abruptly acuminate, attenuate, (7–)9–11(–13) × 4–6 mm, keeled especially in the distal half, densely stellate hairy outside and towards apex inside, the hairs usually with scale-like bases; inner sepals elliptic, obtuse, concave, 6–7 × 4–5 mm, densely hairy outside with short or long stellate hairs with scale-like bases, margins pale, ciliate; petals obovate, bilobed at apex, undulate, 8–10 × 7–10 mm; stamens 70–74, all placed around the carpels; filaments free, filiform, 1.7–2 mm long; anthers narrowly obloid, retuse, 1.7–2.5 mm long; carpels 3, densely hairy with stellate hairs with scale-like bases, ovules 3 or 4 per carpel; styles glabrous, 3.5–4 mm long. Seeds (immature ones only seen) 3 or 4 per carpel, obovoid. **Fig. 2M–R.**

Selected specimens: Queensland. Cook District: Mt Mulligan, Apr 1984, *Clarkson* 5307 (BRI); ditto, Mar 1986, *Walker* (BRI); ditto, Apr 1989, *Neldner* 2759 (BRI).

Distribution and habitat: Around Laura and Mt Mulligan, northeastern Queensland (**Map 2**); in sandstone scree slopes and escarpments; altitude 660–750 m.

H. mulligana is easily recognisable by its very narrow leaves with revolute margins, long pedunculate flowers; broadly ovate acuminate keeled outer sepals, densely stellate hairy stems and leaves. It is allied to *H. melhanioides* of which it has the solitary pedunculate flowers, but the leaves are much broader (more than 10 mm wide), the margins flat or slightly recurved, outer sepals narrowly ovate and stamens fewer (22–40 per flower) in *H. melhanioides.*

Etymology: The specific epithet is derived from Mt Mulligan, where this species was first collected and is quite common.

7. Hibbertia cymosa S. Reyn. **sp. nov.** insignis inflorescentis cymosis, 2- vel 3-floribus, a speciebus nobis notis bene distincta. Accedit *H. melhanioidi* F. Muell. quoad aspectu, forman foliorum et indumentum sed ab ea differt sepalis suborbicularis lepidotis, et staminibus numerosis (52–80 numero variantibus). **Typus:** Queensland. Cook District: Sandy Creek area NE of Jowalbinna, 15°43′S, 144°18′E, 4 July 1990, *A.R. Bean* 1713 (holo: BRI; iso: BRI).

Erect shrub to 1.4 m high; branchlets and leaves densely stellate hairy with long whitish hairs; branchlets terete. Leaves obovate or obovate-elliptic, (2.8–)4.1–6 × (0.9–)1.2–1.8 cm, apex obtuse shortly mucronate or slightly retuse; base acute narrowing into short petiole; margins entire, slightly recurved, upper surfaces dark green, sparsely stellate hairy, lower ones whitish, densely stellate hairy; midrib sunken above; lateral nerves indistinct, ± patent, looping at margins; petioles 2–4 mm long. Inflorescences cymose, shortly pedunculate, axillary or supra-axillary, 2- or 3-flowered; bracts elliptic or elliptic-ovate, 2–5.5 × 1–1.5 mm, stellate hairy, foliaceous. Buds globose. Flowers 1.2–1.6 cm diameter; pedicels 6–11 mm long, filiform, scaly or with a few stellate hairs with scale-like bases; bracteoles ovate, obtuse, 1–1.5 × 1–1.25 mm, ciliate, scaly outside, often papillose inside; sepals suborbicular or elliptic, rounded at apex, concave, scaly outside, glabrous inside; outer sepals narrow, 4–4.5 × 3.5–4 mm; inner ones broad, 5–7 × 5.5–6.5 mm; petals obovate, 2-lobed at apex, 7–8 × 6–7 mm, entire; stamens 52–80, all placed around the carpels; filaments united at base, filiform, 2.5–3 mm long; anthers narrowly ellipsoid, about 1 mm long; carpels 2, densely scaly outside, ovules 2 per carpel;

style glabrous. Seeds 1 or 2 per carpel, subglobose, 2–2.5 × 2–2.5 mm, shiny, brownish, with a thin cupular lobed aril at its base. **Fig. 3G–J.**

Distribution and habitat: Known only from the type (**Map 3**); growing beside creek with *Lophostemon suaveolens* and *Dillenia alata.*

H. cymosa is distinguishable from other species that I have seen from Queensland by its few flowered (2- or 3-flowered) cymose inflorescences. It is also distinguishable by its densely hairy stems and leaves, and densely lepidote sepals and carpels. It approaches *H. melhanioides* in its aspect, leaf shape and indumentum but differs in the suborbicular lepidote sepals and numerous stamens (52–80 in number). The sepals are narrowly ovate, and stamens fewer (22–40 per flower) in *H. melhanioides.*

Etymology: The specific epithet refers to the cymose inflorescence.

8. Hibbertia pholidota S. Reyn. **sp. nov.** *H. lepidotae* R. Br. ex DC. affinis a qua imprimis differt foliis fere duplo latioribus oblongis vel ellipticis, apice obtusissimis, retusis vel emarginatis. **Typus**: Queensland. NORTH KENNEDY DISTRICT: Hinchinbrook Island, Deluge Inlet, north branch 3.5 km from mouth, 7 June 1977, *A. & M. Thorsborne* 520 (holo: BRI).

Scaly trailing shrubs with usually procumbent branchlets to 2 m high; branchlets triquetrous especially towards their tips; stems, leaves, petiole, sepals and peduncles densely covered with large, shiny or scarious peltate scales. Leaves oblong or elliptic-oblong, (1.6–)2.7–5.7 × 0.6–1.2 cm; apex obtuse and apiculate, or retuse or emarginate, often slightly recurved; margins entire, flat or slightly recurved; base obtuse; upper surfaces green, densely scaly with scarious shiny scales, or scaly only towards the midrib, or glabrous and with only a row of scales along the margins; lower surfaces silvery, densely covered with scarious shiny scales; midrib ± sunken above; lateral nerves indistinct, ± patent, looping at margins; petioles 2–4.5 mm long. Flowers 1.2–1.7 cm diameter, solitary, axillary, long pedunculate; peduncles filiform, dilated towards the apex, 1.4–4 cm long, sparsely scaly; bracts ovate, 1–3 × 1–1.5 mm, densely scaly. Buds ± globose. Sepals broadly elliptic, concave; outer sepals 4–5 × 2.5–3 mm, densely scaly outside, glabrous inside; inner sepals 5–6 × 3.5–4.5 mm, densely scaly outside except the pale margins; petals obovate, bilobed at apex, 7–7.5 × 5–6 mm, entire or crenulate; stamens 30–39, all placed around the carpels; filaments free, filiform 1–1.5 mm long; anthers narrowly obloid, to 1.5 mm long; staminodes absent; carpels 2, densely scaly; style 3 mm long, glabrous; ovules 2 per carpel. Seeds solitary in each carpel, subglobose, to 2 × 3 mm, reddish brown, with a small membranous campanulate lobed aril at its base. **Fig. 2F–L.**

Specimens examined: Queensland. NORTH KENNEDY DISTRICT: Hinchinbrook Island, Mar 1986, *Warrian* 5060 (BRI); ditto, NE slopes of Mt Diamantina, Aug 1951, *Blake* 18856 (BRI); ditto, Zoe Bay, Oct 1982, *Tracey* 15486 (BRI); ditto, southern end of Little Ramsay Bay, Aug 1975, *Sharpe* 1733 (BRI); 27 km south of Cardwell, 220 m west of Bruce Highway, May 1970, *Thorsborne* & *Thorsborne* 226 (BRI).

Distribution and habitat: North Queensland, near Cardwell and at Hinchinbrook Island where it is common (**Map 2**); usually along creeks in sandy soil creeping over rocks.

H. pholidota is distinguishable by the shiny scales on the leaves, stems, peduncles and sepals, and by its broad, obtuse, usually oblong leaves, and very angular (triquetrous) young branchlets. It is allied to *H. lepidota* R. Br. ex DC. of which it has the shiny scales, but leaves are very narrrow, acute, flat or ± concave, and densely scaly, and stamens fewer (less than 18 per flower) in *H. lepidota.*

Etymology: The specific epithet refers to the scales (*pholidotos* (Greek), scaly) on the plant.

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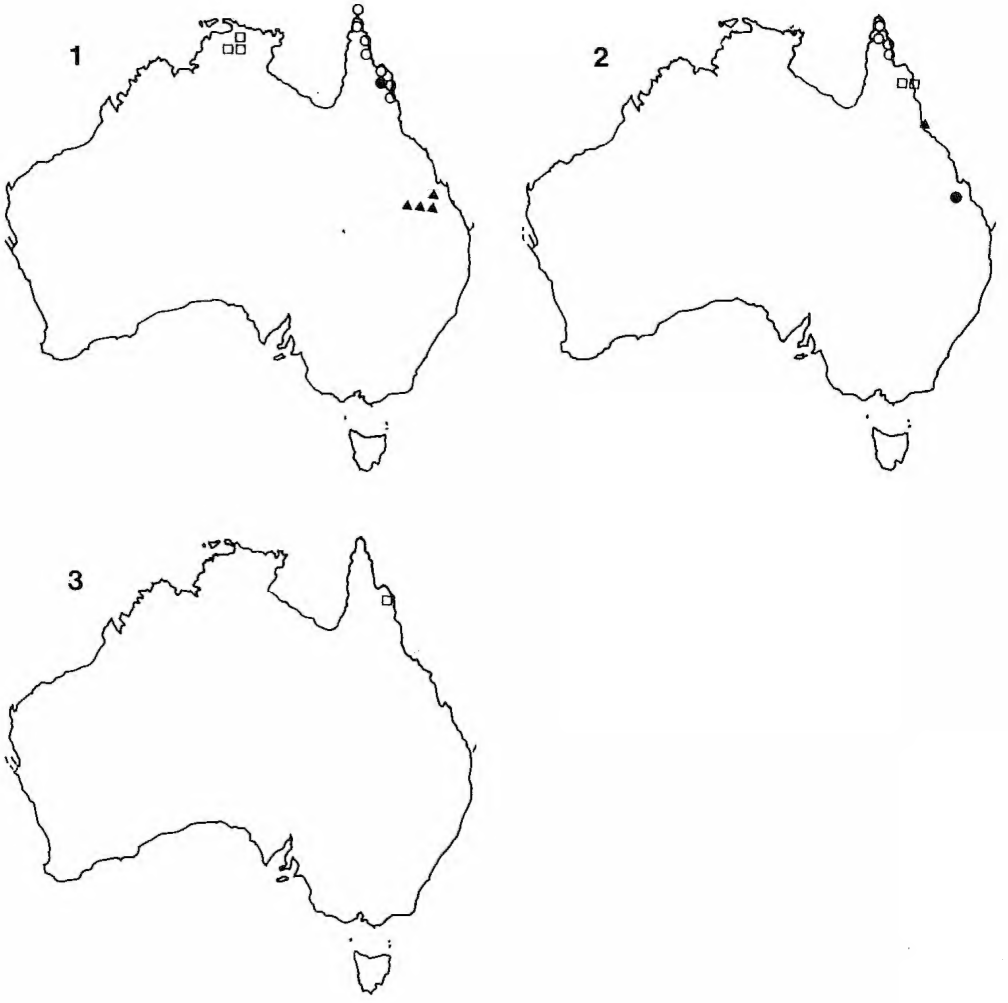

Maps 1–3. Distribution of *Hibbertia* spp.: 1. *H. arnhemica* □; *H. banksii* forma *banksii* ○; *H. laurana* ●; *H. oligodonta* ▲. 2. *H. banksii* forma *rigidula* ○; *H. hendersonii* ●; *H. mulligana* □; *H. pholidota* ▲. 3. *H. cymosa* □.

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